

Application No.: 09/919,877
Amdt. Dated: December 20, 2005
Reply to Office Action Dated: July 21, 2005

Attorney Docket No. CMED.10023
Page 2 of 17

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

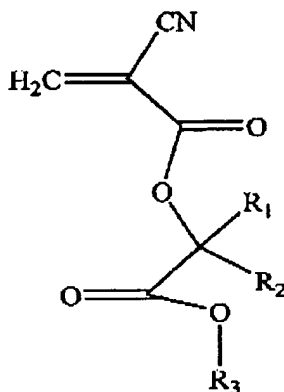
Listing of Claims:

Claims 1-73 (Canceled)

Claim 74 (New) A biocompatible adhesive composition comprising:
a first monomer species comprising an alkyl ester cyanoacrylate,
a second monomer species different from the first monomer species comprising an alkyl α -cyanoacrylate, and
a polymerization initiator or accelerator,
wherein the first monomer species has a first polymer absorption rate and the second monomer species has a second polymer absorption rate different from the first polymer absorption rate and the biocompatible adhesive composition has a third polymer absorption rate different from the first and second polymer absorption rates.

Claim 75 (New) The biocompatible adhesive composition of claim 74, wherein the first monomer species and the second monomer species have different polymer absorption rates such that a polymer absorption rate of a faster absorbing monomer species is at least 10% faster than a polymer absorption rate of a slower absorbing monomer species.

Claim 76 (New) The biocompatible adhesive composition of claim 74, wherein said alkyl ester cyanoacrylate has the formula



Application No.: 09/919,877
Amdt. Dated: December 20, 2005
Reply to Office Action Dated: July 21, 2005

Attorney Docket No. CMEID.10023
Page 3 of 17

wherein R_1 and R_2 are independently H, a straight, branched or cyclic alkyl group, or are combined together in a cyclic alkyl group, and R_3 is a straight, branched or cyclic alkyl group.

Claim 77 (New) The biocompatible adhesive composition of claim 76, wherein R_1 and R_2 are independently H or a C_1 , C_2 or C_3 alkyl group and R_3 is a C_1 - C_{16} alkyl group.

Claim 78 (New) The biocompatible adhesive composition of claim 74, wherein said alkyl ester cyanoacrylate is selected from the group consisting of butyl lactoyl cyanoacrylate, butyl glycoloyl cyanoacrylate, isopropyl glycoloyl cyanoacrylate, ethyl lactoyl cyanoacrylate, and ethyl glycoloyl cyanoacrylate.

Claim 79 (New) The biocompatible adhesive composition of claim 74, wherein said second monomer species is an alkyl α -cyanoacrylate having an alkyl group of from about 2 to about 12 carbon atoms.

Claim 80 (New) The biocompatible adhesive composition of claim 79, wherein said second monomer species is selected from the group consisting of octyl α -cyanoacrylate, hexyl α -cyanoacrylate, butyl α -cyanoacrylate and ethyl α -cyanoacrylate.

Claim 81 (New) The biocompatible adhesive composition of claim 74, wherein a weight ratio of said first monomer species to said second monomer species is from about 1:99 to about 99:1.

Claim 82 (New) The biocompatible adhesive composition of claim 74, wherein a weight ratio of said first monomer species to said second monomer species is from about 10:90 to about 90:10.

Claim 83 (New) The biocompatible adhesive composition of claim 74, wherein a weight ratio of said first monomer species to said second monomer species is from about 15:85 to about 85:15.

Application No.: 09/919,877
Amdt. Dated: December 20, 2005
Reply to Office Action Dated: July 21, 2005

Attorney Docket No. CMED.10023
Page 4 of 17

Claim 84 (New) The biocompatible adhesive composition of claim 74, wherein a weight ratio of said first monomer species to said second monomer species is from about 25:75 to about 75:25.

Claim 85 (New) The biocompatible adhesive composition of claim 74, wherein said first monomer species comprises butyl lactoyl cyanoacrylate and said second monomer species comprises octyl α -cyanoacrylate.

Claim 86 (New) The biocompatible adhesive composition of claim 74, wherein said composition further comprises at least one additive selected from the group consisting of anionic stabilizing agents, free radical stabilizing agents, colorants, and plasticizers.

Claim 87 (New) The biocompatible adhesive composition of claim 74, wherein said composition comprises:

- a monomer blend comprising from about 25 to about 40 parts by weight butyl lactoyl cyanoacrylate and from about 60 to about 75 parts by weight octyl cyanoacrylate (OCA);
- at least one anionic stabilizer; and
- at least one radical stabilizer.

Claim 88 (New): The biocompatible adhesive composition of claim 87, wherein said at least one anionic stabilizer comprises about 25 to about 100 ppm of sulfuric acid and from about 1 to about 50 ppm sulfur dioxide, and said at least one radical stabilizer comprises from about 100 to about 2000 ppm hydroquinone, from about 10 to about 200 ppm p-methoxyphenol, and from about 100 to about 10,000 ppm butylated hydroxyanisole.

Claim 89 (New) The biocompatible adhesive composition of claim 86, wherein said composition further comprises at least one additive selected from the group consisting of anionic stabilizing agents, free radical stabilizing agents and plasticizers, and the additive is present in an amount of 0 to 25 weight % based on a total weight of the composition.

Claim 90 (New) The biocompatible adhesive composition of claim 86, wherein said composition further comprises at least one additive selected from the group consisting of

Application No.: 09/919,877
Amdt. Dated: December 20, 2005
Reply to Office Action Dated: July 21, 2005

Attorney Docket No. CMED.10023
Page 5 of 17

anionic stabilizing agents, free radical stabilizing agents and plasticizers, and the additive is present in an amount of 0 to 10 weight % based on a total weight of the composition.

Claim 91 (New) The biocompatible adhesive composition of claim 86, wherein said composition further comprises at least one additive selected from the group consisting of anionic stabilizing agents, free radical stabilizing agents and plasticizers, and the additive is present in an amount of 0 to 5 weight % based on a total weight of the composition.

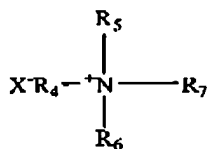
Claim 92 (New) The biocompatible adhesive composition of claim 74, wherein said composition further comprises about 20 ppm sulfuric acid, 0 to 20 ppm sulfur dioxide, 0 to 2000 ppm hydroquinone, 0 to 180 ppm p-methoxyphenol and 0 to 2000 ppm butylated hydroxyanisole.

Claim 93 (New) The biocompatible adhesive composition of claim 92, wherein said first monomer species comprises butyl lactoyl cyanoacrylate and said second monomer species comprises octyl α -cyanoacrylate.

Claim 94 (New) The biocompatible adhesive composition of claim 74, wherein the polymerization initiator or accelerator is a quaternary amine.

Claim 95 (New) The biocompatible adhesive composition of claim 74, further comprising a second different polymerization initiator or accelerator.

Claim 96 (New) The biocompatible adhesive composition of claim 94, wherein the quaternary amine has the formula



wherein R_4 , R_5 , R_6 and R_7 are each independently H or a substituted or unsubstituted straight, branched or cyclic alkyl group; a substituted or unsubstituted aromatic ring; a substituted or unsubstituted aralkyl group; or a substituted or unsubstituted alkyl or aromatic group including one or more hetero atoms; and X^- is an anion.

Application No.: 09/919,877
Amdt. Dated: December 20, 2005
Reply to Office Action Dated: July 21, 2005

Attorney Docket No. CMED.10023
Page 6 of 17

Claim 97 (New) The biocompatible adhesive composition of claim 94, wherein the quaternary amine is selected from the group consisting of domiphen bromide, butyrylcholine chloride, benzalkonium bromide and acetyl choline chloride.

Claim 98 (New) The biocompatible adhesive composition of claim 94, wherein the quaternary amine is a benzalkonium halide having a chain length from about 12 to about 18 carbon atoms.

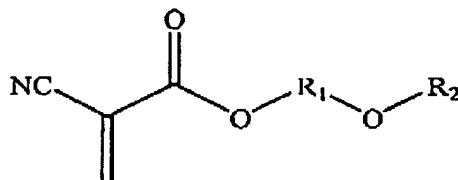
Claim 99 (New) The biocompatible adhesive composition of claim 74, wherein the polymerization initiator or accelerator polymerizes a mixture of the first monomer species and the second monomer species in less than 3 minutes.

Claim 100 (New) The biocompatible adhesive composition of claim 74, wherein the first monomer species and the second monomer species are present in an amount of at least 65 percent by weight of the biocompatible adhesive composition.

Claim 101 (New) The biocompatible adhesive composition of claim 74, wherein at least the first monomer species forms a polymer that is absorbable.

Claim 102 (New) A polymerized film formed by curing the biocompatible adhesive composition of claim 74.

Claim 103 (New) A biocompatible adhesive composition comprising:
a first monomer species comprising an alkyl ester cyanoacrylate,
a second monomer species different from the first monomer species comprising an alkyl ether cyanoacrylate having the formula



Application No.: 09/919,877
Amdt. Dated: December 20, 2005
Reply to Office Action Dated: July 21, 2005

Attorney Docket No. CMED.10023
Page 7 of 17

where R_1 is a straight, branched or cyclic alkyl, and R_2 is a straight, branched or cyclic alkyl group, and

a polymerization initiator or accelerator,

wherein the first monomer species has a first polymer absorption rate and the second monomer species has a second polymer absorption rate different from the first polymer absorption rate and the biocompatible adhesive composition has a third polymer absorption rate different from the first and second polymer absorption rates.

Claim 104 (New) The biocompatible adhesive composition of claim 103, wherein the first monomer species and the second monomer species have different polymer absorption rates such that a polymer absorption rate of a faster absorbing monomer species is at least 10% faster than a polymer absorption rate of a slower absorbing monomer species.

Claim 105 (New) The biocompatible adhesive composition of claim 103, wherein R_1 is C_1 , C_2 or C_3 alkyl group and R_2 is a C_1 - C_{16} alkyl group.

Claim 106 (New) The biocompatible adhesive composition of claim 103, wherein said alkyl ether cyanoacrylate is selected from the group consisting of isopropoxy ethyl cyanoacrylate and methoxy butyl cyanoacrylate.

Claim 107 (New) The biocompatible adhesive composition of claim 103, wherein said alkyl ester cyanoacrylate is selected from the group consisting of butyl lactoyl cyanoacrylate, butyl glycoloyl cyanoacrylate, isopropyl glycoloyl cyanoacrylate, ethyl lactoyl cyanoacrylate, and ethyl glycoloyl cyanoacrylate.

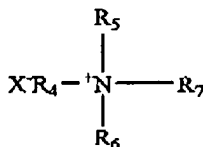
Claim 108 (New) The biocompatible adhesive composition of claim 103, wherein the polymerization initiator or accelerator is a quaternary amine.

Claim 109 (New) The biocompatible adhesive composition of claim 103, further comprising a second different polymerization initiator or accelerator.

Claim 110 (New) The biocompatible adhesive composition of claim 108, wherein the quaternary amine has the formula

Application No.: 09/919,877
Amdt. Dated: December 20, 2005
Reply to Office Action Dated: July 21, 2005

Attorney Docket No. CMED.10023
Page 8 of 17



wherein R_4 , R_5 , R_6 and R_7 are each independently H or a substituted or unsubstituted straight, branched or cyclic alkyl group; a substituted or unsubstituted aromatic ring; a substituted or unsubstituted aralkyl group; or a substituted or unsubstituted alkyl or aromatic group including one or more hetero atoms; and X^- is an anion.

Claim 111 (New) The biocompatible adhesive composition of claim 108, wherein the quaternary amine is selected from the group consisting of domiphen bromide, butyrylcholine chloride, benzalkonium bromide and acetyl choline chloride.

Claim 112 (New) The biocompatible adhesive composition of claim 108, wherein the quaternary amine is a benzalkonium halide having a chain length from about 12 to about 18 carbon atoms.

Claim 113 (New) The biocompatible adhesive composition of claim 103, wherein at least the first monomer species forms a polymer that is absorbable.

Claim 114 (New) The biocompatible adhesive composition of claim 103, wherein a weight ratio of said first monomer species to said second monomer species is from about 1:99 to about 99:1.

Claim 115 (New) The biocompatible adhesive composition of claim 103, wherein a weight ratio of said first monomer species to said second monomer species is from about 10:90 to about 90:10.

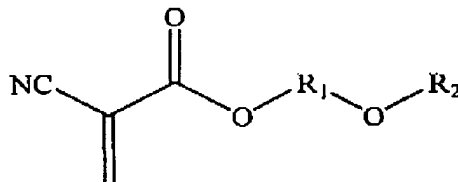
Claim 116 (New) The biocompatible adhesive composition of claim 103, wherein a weight ratio of said first monomer species to said second monomer species is from about 15:85 to about 85:15.

Application No.: 09/919,877
Amdt. Dated: December 20, 2005
Reply to Office Action Dated: July 21, 2005

Attorney Docket No. CMED.10023
Page 9 of 17

Claim 117 (New) The biocompatible adhesive composition of claim 103, wherein a weight ratio of said first monomer species to said second monomer species is from about 25:75 to about 75:25.

Claim 118 (New) A biocompatible adhesive composition comprising:
a first monomer species comprising an alkyl ether cyanoacrylate having the formula



where R₁ is a straight, branched or cyclic alkyl, and R₂ is a straight, branched or cyclic alkyl group,

a second monomer species different from the first monomer species comprising an alkyl α -cyanoacrylate, and

a polymerization initiator or accelerator,

wherein the first monomer species has a first polymer absorption rate and the second monomer species has a second polymer absorption rate different from the first polymer absorption rate and the biocompatible adhesive composition has a third polymer absorption rate different from the first and second polymer absorption rates.

Claim 119 (New) The biocompatible adhesive composition of claim 118, wherein the first monomer species and the second monomer species have different polymer absorption rates such that a polymer absorption rate of a faster absorbing monomer species is at least 10% faster than a polymer absorption rate of a slower absorbing monomer species.

Claim 120 (New) The biocompatible adhesive composition of claim 118, wherein R₁ is C₁, C₂ or C₃ alkyl group and R₂ is a C₁-C₁₆ alkyl group.

Claim 121 (New) The biocompatible adhesive composition of claim 118, wherein said alkyl ether cyanoacrylate is selected from the group consisting of isopropoxy ethyl cyanoacrylate and methoxy butyl cyanoacrylate.

Application No.: 09/919,877
Amdt. Dated: December 20, 2005
Reply to Office Action Dated: July 21, 2005

Attorney Docket No. CMED.10023
Page 10 of 17

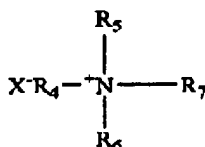
Claim 122 (New) The biocompatible adhesive composition of claim 118, wherein said second monomer species is an alkyl α -cyanoacrylate having an alkyl group of from about 2 to about 12 carbon atoms.

Claim 123 (New) The biocompatible adhesive composition of claim 118, wherein said second monomer species is selected from the group consisting of octyl α -cyanoacrylate, hexyl α -cyanoacrylate, butyl α -cyanoacrylate and ethyl α -cyanoacrylate.

Claim 124 (New) The biocompatible adhesive composition of claim 118, wherein the polymerization initiator or accelerator is a quaternary amine.

Claim 125 (New) The biocompatible adhesive composition of claim 118, further comprising a second different polymerization initiator or accelerator.

Claim 126 (New) The biocompatible adhesive composition of claim 124, wherein the quaternary amine has the formula



wherein R_4 , R_5 , R_6 and R_7 are each independently H or a substituted or unsubstituted straight, branched or cyclic alkyl group; a substituted or unsubstituted aromatic ring; a substituted or unsubstituted aralkyl group; or a substituted or unsubstituted alkyl or aromatic group including one or more hetero atoms; and X^+ is an anion.

Claim 127 (New) The biocompatible adhesive composition of claim 124, wherein the quaternary amine is selected from the group consisting of domiphen bromide, butyrylcholine chloride, benzalkonium bromide and acetyl choline chloride.

Claim 128 (New) The biocompatible adhesive composition of claim 124, wherein the quaternary amine is a benzalkonium halide having a chain length from about 12 to about 18 carbon atoms.

Application No.: 09/919,877
Amdt. Dated: December 20, 2005
Reply to Office Action Dated: July 21, 2005

Attorney Docket No. CMED.10023
Page 11 of 17

Claim 129 (New) The biocompatible adhesive composition of claim 118, wherein at least the first monomer species forms a polymer that is absorbable.

Claim 130 (New) The biocompatible adhesive composition of claim 118, wherein a weight ratio of said first monomer species to said second monomer species is from about 1:99 to about 99:1.

Claim 131 (New) The biocompatible adhesive composition of claim 118, wherein a weight ratio of said first monomer species to said second monomer species is from about 10:90 to about 90:10.

Claim 132 (New) The biocompatible adhesive composition of claim 118, wherein a weight ratio of said first monomer species to said second monomer species is from about 15:85 to about 85:15.

Claim 133 (New) The biocompatible adhesive composition of claim 118, wherein a weight ratio of said first monomer species to said second monomer species is from about 25:75 to about 75:25.